

**To:** Shaw, Hanh[Shaw.Hanh@epa.gov]  
**From:** a.macrander@shell.com  
**Sent:** Thur 11/14/2013 3:52:11 PM  
**Subject:** FW: Table from draft EMP  
Burger A metal concentrations in sediments - Original Table..docx

Hanh,

Thanks for the reminder. I passed this along and then got side tracked on other matters, so forgot to forward it to you.

Michael

**From:** Waverly Thorsen [mailto:waverly.thorsen@fairweather.com]  
**Sent:** Thursday, November 07, 2013 2:19 PM  
**To:** Macrander, Alan M SEPCO-UAA/A/SS; bbohn@olgoonik.com  
**Subject:** RE: Table from draft EMP

Michael,

Indeed, that looks like a cut and paste error. There is another error that I noticed as well in the version you sent in the email below – the unit for total Hg should be ng/g not ng/L (i.e., the matrix is sediment, not water/aqueous).

I went back to the original from John Trefry to verify. Please find attached the original table in a Word document.

The correct table is also pasted below. Apologies if this was from a mistake that was made on our end.

Concentrations of metals (mean  $\pm$  standard deviation) in sediment samples from 2012 study of Burger A study area, northeastern Chukchi Sea.

Parameter	Ag	Al	As	Ba	Be	Cd	Cr	Cu	Fe	Total Hg
(n = 18)	(µg/g)	(%)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(%)	(ng/g)
Mean	0.14	6.09	13.0	625	1.4	0.19	85	17.0	3.5	39
Std. Dev.	0.02	0.17	3.3	14	0.1	0.02	3	1.3	0.2	3
RSD*	14	2.8	25	2.2	7.1	10	3.5	7.7	5.7	7.7

Parameter	MeHg	Mn	Ni	Pb	Sb	Se	Sn	Tl	V	Zn
(n = 18)	(ng/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)
Mean	0.115	329	29	12.6	0.70	0.93	2.0	0.44	130	92
Std. Dev.	0.015	27	1.3	0.6	0.03	0.04	0.2	0.02	8	5
RSD*	13	5.2	4.6	4.7	3.6	4.8	10	4.7	5.9	5.5

\*RSD = Relative standard deviation = (standard deviation/mean) x 100%.

Thanks,

Waverly

**From:** [a.macrander@shell.com](mailto:a.macrander@shell.com) [<mailto:a.macrander@shell.com>]

**Sent:** Thursday, November 07, 2013 2:07 PM

**To:** Waverly Thorsen; [bbohn@olgoonik.com](mailto:bbohn@olgoonik.com)

**Subject:** FW: Table from draft EMP

Please check the numbers in the table below. I don't think that the values in the lower row should be exactly the same as the ones in the top row. If these values are correct, please verify.

**From:** Shaw, Hanh [<mailto:Shaw.Hanh@epa.gov>]

**Sent:** Thursday, November 07, 2013 1:46 PM

**To:** Macrander, Alan M SEPCO-UAA/A/SS  
**Cc:** Horner, Greg J SEPCO-UAX/A/SD; Seyfried, Erin  
**Subject:** Table from draft EMP

Hi Michael,

Below is a table from the draft EMP, which at closer review indicates a potential errant cut and paste. I am planning to use this information in the Geotech ODCE and would like to request your help with making the proper corrections. It would be great if we could have the information by Wednesday of next week.

Thank you and please let me know if you have any questions or concerns.

**Table XX. Concentrations of metals (mean  $\pm$  SD) in sediment samples from Burger A**

Parameter	Ag	Al	As	Ba	Be	Cd	Cr	Cu	Fe	Total Hg (ng/L)
(n = 18)	( $\mu\text{g/g}$ )	(%)	( $\mu\text{g/g}$ )	( $\mu\text{g/g}$ )	( $\mu\text{g/g}$ )	( $\mu\text{g/g}$ )	( $\mu\text{g/g}$ )	( $\mu\text{g/g}$ )	( $\mu\text{g/g}$ )	
Mean	0.14	6.09	13.0	625	1.4	0.19	85	17.0	3.5	39
SD <sup>1</sup>	0.02	0.17	3.3	14	0.1	0.02	3	1.3	0.2	3
RSD <sup>2</sup>	14	2.8	25	2.2	7.1	10	3.5	7.7	5.7	7.7

Parameter	MeHg	Mn	Ni	Pb	Sb	Se	Sn	Tl	V	Zn ( $\mu\text{g/g}$ )
	( $\text{ng/g}$ )	( $\mu\text{g/g}$ )	( $\mu\text{g/g}$ )	( $\mu\text{g/g}$ )	( $\mu\text{g/g}$ )	( $\mu\text{g/g}$ )	( $\mu\text{g/g}$ )	( $\mu\text{g/g}$ )	( $\mu\text{g/g}$ )	
Mean	0.14	6.09	13.0	625	1.4	0.19	85	17.0	3.5	39
SD	0.02	0.17	3.3	14	0.1	0.02	3	1.3	0.2	3
RSD <sup>1</sup>	14	2.8	25	2.2	7.1	10	3.5	7.7	5.7	7.7

<sup>1</sup> SD – standard deviation

<sup>2</sup> RSD = (SD/mean) x 100%

V = vanadium

Hanh Shaw, Manager

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